

Current Status of the Claims

This listing of claims will replace all prior version, and listings, of claims in the application:

1. (currently amended) A surge relief valve comprising:
 - a main valve body comprising a dome port and an inlet port, wherein said inlet port is in fluid communication with a first fluid;
 - a springless dome reservoir connected to said main valve body via said dome port and arranged to hold a second fluid, said dome reservoir external to said main valve body;
 - a piston located in said main valve body, wherein said piston is in fluid communication with said reservoir; and,
 - a dampening ring positioned circumferentially about said piston and operatively arranged to dampen movement of said piston;
 - wherein said first fluid exerts an upward force on said piston, said second fluid exerts a downward force on said piston, and said piston is arranged to move in response to a differential in said upward and downward forces, wherein said first and second fluids are isolated from one another[.]; and,
 - wherein said springless dome reservoir lacks a piston; and,
 - wherein said downward force is created solely by compression of said second fluid within said springless dome reservoir
2. (currently amended) The surge relief valve of as recited in Claim 1 wherein said main valve body further comprises an outlet port, wherein said piston is arranged to control fluid communication between said inlet port and said outlet port.
3. (currently amended) The surge relief valve of as recited in Claim 2 wherein said outlet port is substantially perpendicular to said inlet port.

4. (currently amended) The surge relief valve of as recited in Claim 2 wherein said piston is arranged to provide fluid isolation between said inlet and outlet ports when said downward force is greater than said upward force and to enable fluid communication between said inlet and outlet ports when said upward force is greater than said downward force.

5. (currently amended) The surge relief valve of as recited in Claim 4 wherein a degree of fluid communication between said inlet and outlet ports is proportional to said differential in said upward and downward forces.

6. (currently amended) The surge relief valve of as recited in Claim 1 wherein said second fluid is at a specified pressure; and, said surge relief valve further comprises a self-relieving regulator connected to said main valve body and in fluid communication with said piston volume, wherein said self-relieving regulator is arranged to control said second fluid specified pressure.

7. (currently amended) The surge relief valve of as recited in Claim 6 wherein said self-relieving regulator is arranged to maintain said second fluid specified pressure at a predetermined value in response to changes in an ambient temperature.

8. (currently amended) The surge relief valve of as recited in Claim 1 wherein said first fluid is a liquid.

9. (currently amended) The surge relief valve of as recited in Claim 8 wherein said liquid is oil.

10. (currently amended) The surge relief valve of as recited in Claim [8] 9 wherein said oil is petroleum oil.

11. (currently amended) The surge relief valve of as recited in Claim 1 wherein said second fluid is a gas.

12. (currently amended) The surge relief valve of as recited in Claim 11 wherein said gas is selected from the group consisting of nitrogen and air.

13. (currently amended) The surge relief valve of as recited in Claim 1 wherein said dome reservoir further comprises a first reservoir port and said dome reservoir is mounted directly to said main valve body with said first reservoir port in substantial alignment with said dome port.

14. (currently amended) The surge relief valve of as recited in Claim 1 further comprising:
a piping arrangement with a first end connected to said dome reservoir and a second end connected to said dome port and arranged to provide said fluid communication between said dome reservoir and said piston.

15. (currently amended) The surge relief valve of as recited in Claim 14 wherein said reservoir dome is mounted to said main valve body.

16. (currently amended) The surge relief valve of as recited in Claim 14 wherein said reservoir dome is remote from said main valve body.

17. (currently amended) A method for relieving pressure in a fluid-containing space comprising:

exerting an upward force on a piston in a relief valve connected to a fluid-containing space, wherein said upward force is generated by a first fluid in said fluid-containing space;

exerting a downward force on said piston, wherein said downward force is generated solely by a second fluid in a dome reservoir connected to said relief valve, and wherein said dome reservoir lacks a piston and is springless and external to a main valve body of said relief valve;

moving said piston in response to a differential between said upward and downward forces; and,

dampening movement of said piston by means of a dampening ring positioned circumferentially about said piston.

18. (currently amended) The method of as recited in Claim 17 wherein moving said piston further comprises controlling a release of said first fluid from said fluid-containing space.

19. (currently amended) The method of as recited in Claim 18 wherein said relief valve comprises an inlet connected to said fluid-containing space and an outlet substantially perpendicular to said inlet; and,

wherein controlling a release of said first fluid from said fluid-containing space further comprises controlling a release of said first liquid through said inlet to said outlet.

20. (currently amended) The method of as recited in Claim 18 wherein controlling a release of said first fluid further comprises preventing said release when said downward force is greater than said upward force and enabling said release when said upward force is greater than said downward force.

21. (currently amended) The method of as recited in Claim 20 wherein enabling said release further comprises enabling an amount of said release proportional to said differential in said upward and downward forces.

22. (currently amended) The method of as recited in Claim 17 wherein said second fluid is at a specified pressure; and,
said method further comprises controlling said specified pressure.

23. (currently amended) The method of as recited in Claim 22 wherein controlling said specified pressure further comprises maintaining said specified pressure at a predetermined value in response to changes in an ambient temperature proximate said relief valve.

24. (currently amended) The surge relief valve of as recited in Claim 1 wherein said dampening ring is recessed into said piston.

25. (currently amended) The surge relief valve of as recited in Claim 1 wherein said dampening ring is a wedge ring having a wedge-shaped cross section.

26. (currently amended) The surge relief valve of as recited in Claim 1 wherein said dampening ring is made of graphite filled polytetrafluoroethylene.

27. (new) The method of relieving pressure in a fluid-containing space as recited in Claim 22 wherein said specified pressure is a function of the ratio of the nozzle area to piston seal area of said relief valve.